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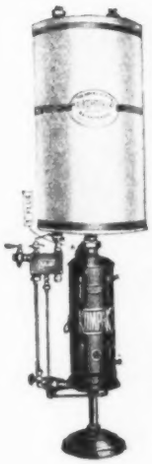

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INDEX TO CONTENTS, PAGE 530 ADVERTISERS' INDEX, PAGE 20

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Gas Industry May Be Means by Which American Scale of Wages May Be Retained While Nation Competes Successfully with European Nations in the Foreign Market

None Blessed as We Are with Natural Resources—If We Utilize Them Intelligently Lower Labor Costs of Other Countries Will Be of Little Importance

By EDWIN DEAN

During the past four years we have been manufacturer to a good part of the entire world. Some of the nations we have been supplying have been big producers themselves. They supplied their own needs and a good part of the needs of countries less developed industrially as well. There is little question of their ability to do so again, now that the war that has engrossed their whole attention is ended.

We are developed industrially far beyond our own ability to consume. If we curtail there must be widespread unemployment even before some four million soldiers are demobilized. Then the situation will be worse.

Such a thing is unthinkable.

Beyond Our Own Shores Lies Our Salvation

Beyond our own shores lies our salvation and there we will find it. But in the Argentine, for example, there will be no protective tariff to favor us. We must compete on an equal basis with others Quality and price will determine whether we fare well or poorly. The latter will be the determining factor, for we have no monopoly on the former.

European nations before the war had a big advantage over us in the relative cost of labor. Doubtless they will have the same advantage when they seek these markets anew.

How are we to overcome this advantage?

By bringing our own labor costs down?

No thinking man desires to see the American standard of wages, the American scale of living, lowered. No one wants a peasantry in the European sense in the United States. We must seek some compensating economy, and there are many.

We know something more about economy in fuel in developing power than we did before a terrible emergency compelled us to take stock. We are not likely to have to ship our goods a thousand miles over railroads to reach seaboard a hundred miles away as we once did with consequent expense that had to be added to the cost of the goods. We have acquired an extensive knowledge of labor saving machinery.

But, as may be asserted, European countries also must have learned short cuts as well. Will not those we have discovered be offset by these?

An Advantage That None Can Overcome

Possibly, but there yet remains an advantage that cannot be overcome if intelligently exploited. This is in our natural resources. No other industrially developed nation is so fortunately situated in this regard as we are.

We didn't get the true advantage of that resource of incalculable value, natural gas, because of the manner in which we used it. Because it seemed a free gift, we took small pains to utilize it economically.

So it was with manufactured gas. Every foot made cost money and consumed coal. There was more inducement to economical utilization in its case than in the case of natural gas, and there have been developed wonderfully efficient means of using it. But there have been deplorably inefficient efforts to install these means where they would do the most good.

It would be thought that the gas industry would be constantly alert to each new opportunity of enhancing the importance of its product, and diligently assiduous in pushing these opportunities to commercial success.

But what has been the history of almost every new and meritorious device or system for lighting, heating, heat treating, etc., with manufactured gas? Have the gas companies eagerly seized upon it as their own to push with all their power, since in its success, after all, theirs has been the biggest stake?

They did not.

Theirs has been the attitude of pointing to the mere mass of steel or iron—ignoring the possibilities represented by the thousands of cubic feet of gas that must pass through it from month to month, and say *his*—meaning its manufacturer or deviser—is the responsibilty of pushing it through to success.

Obligations As Well As Privileges

We all have our privileges in this world. We also have our obligations. The gas companies have not been invariably successful in obtaining these privileges that were rightfully theirs. Perhaps that is why they have sometimes failed to recognize their obligations.

We have, for instance, a device perfected that enables us to bake bread on a fuel cost basis even—not to mention labor saving, sanitation, etc.—cuts materially the fuel cost of solid fuel. It is good for the whole nation, and each and every one of us that constitute it, that every loaf of bread we eat will be baked in this manner. Our living costs are less, and this is reflected in the cost of every ton of steel made, every pair of shoes, and our consumption of natural resources less and the loads to be carried by our transportation lines less.

A manufacturer takes hold of this device and provides the means of producing it commercially. He also—because in case of such a device in the gas field he has to—tries to distribute it.

What is our attitude. Do we comprehend that in everything relating to gas we are the custodians of the public interests? Or do we look only at our own material interests?

Do we say in effect to that manufacturer: "You are the one who has his money tied up in this device. It's your loss if it doesn't make out, not ours."

Answer this question for yourself.

It is not the purport of this article to assert that the gas industry should make the interests of anyone and everyone, who thinks he has an efficient means of utilizing gas, its own interests.

We have engineers.

Presumptively we should be able to determine if such claims are fact or not. If we are not competent to do this, then we are not rightfully the custodians of the nation's gas interests.

A Great Purpose in the Destinies of the Country

Gas has had a great purpose in the destinies of this country; it may be an immediate purpose to safeguard our industrial prosperity and an aid in maintaining the American wage scale. If we are big enough to comprehend that purpose and effect its realization, then we are truly fitted to be, as we are, the custodians of the country's gas plants.

We cannot do so if we think first and exclusively of self-interests, if we quibble needlessly as to who profits most by a thorough exploitation of a meritorious device.

The gas industry has been fortunate in the manufacturers, the commercial interests, which have tied up their capital and destinies with it, perhaps undeservedly so.

It has given them small encouragement and little cooperation.

Its attitude toward them too often has been of the kind that drives away rather than attracts, and, unless there is a change of attitude, inevitably, it will be less fortunate in this respect in years to come than it has been hitherto.

What this will mean does not need to be explained. Fortunes have been saved to the gas companies in the research these manufacturers have made at their own expenses, and fortunes have been brought into the gas company coffers in the products of this research in the way of gas consumption.

There is little cause to worry about the prospects of this country in the field of foreign trade if American industries form the habit of thinking nationally rather than individually, if the gas man, for instance, feels it his obligation to be the adviser of the brass melter insofar as gas relates to the turning out of his product, if the railroad man feels it to be his obligation to get the gas man's coal to him by the shortest possible route rather than by the route that represents the greatest gain to his own road, and so forth.

To do his full duty to his people, however, the gas man must co-operate to the limit with the manufacturer who makes the apparatus by which gas is applied. If there is a business in his territory that would profit by using gas by a particular burner or system, the gas company owes it to that business to see that that burner or system is brought to its attention and its advantages fully pointed out, whether or not it feels, since to him is the profit of the first sale, it is more the business of the manufacturer of that system or device to discharge this mission.

Such an attitude, if it exists, beyond being shamefully indifferent to a proper responsibility, is an actual stupidity, for no matter how greatly the manufacturer may profit from the sale of his fabrication of steel and iron, the gas company must inevitably profit more, since its profit is continuous and endures and increases for months and years.

Fuel Conservation

As the saving of coal is of vital importance during the coming winter, the suggestions below should be called to the attention of every consumer. By following the rules carefully, he will not only protect his pocketbook but the entire industry of the country as well.

1. Keep the heater free from soot. It is estimated that one-eighth inch of soot on the heating surface of a heater reduces its efficiency 28 per cent.

2. Be sure to use the check-draft damper in the smoke-pipe, as well as the turn-damper. It is estimated that 15 per cent of the coal used in the average home is wasted by improper use of dampers. The check-draft damper seems to be the least understood. It is as important on a heater as a throttle on an engine. Open it to check the fire; close it to make the fire burn more rapidly. Experiment with it, and learn to get the best results.

3. Do not open the whole ash-pit door when you wish to make the fire burn more rapidly, but open the draft damper in the ash-pit door. Opening the whole door supplies air to the fire faster than it is needed for combustion. The air is heated, passes out the chimney, and is so much heat wasted.

4. In moderate weather carry a bed of ashes on top of your grates; in severe weather shake the fire until a red glow appears in the ash-pit.

5. Keep the temperature of the house at 65 deg. instead of 70 deg. or more.

6. Take care to see that the windows and doors are tightly closed; see that no cold air enters.

7. Do not reduce the temperature of the house at night. It takes twice as much coal to heat it up next morning.

8. Raise the window curtains during the day, because sunlight is free heat; but always lower them again at night.

9. Wear heavier clothing and save body heat.

10. In buying draperies for your home, remember that heavy draperies for windows and doors aid in conserving heat; but be sure that they are not near open-flame gas burners.—*Safety News.*

Great Expansion Combined with a Low Stroke-to-Bore Ratio Found in General Conducive to Best Efficiency in International Combustion Engines

C. A. Norman Derives a Formula Giving the Cooling Loss During the Expansion Stroke in Terms of Surface-to-Volume Ratio, the Revolutions Per Minute and the Piston Speed of Engine

There is considerable evidence that a great part of the heat loss to jacket water in an explosion engine occurs, not during the expansion stroke, but rather in the exhaust passages, declared C. A Norman, in a paper presented at the annual meeting of the American Society of Mechanical Engineers, held in New York City, Dec. 3 to 6. Coker found by direct measurement a temperature drop of 150 deg. Cent. (270 deg. Fahr.) between the gas in the cylinder at the end of the expansion stroke and the gas in the exhaust pipe. Dugald Clerk found indirectly that of a total measured jacket loss of 25.4 per cent, about 16 occurred in the cylinder, and consequently 9.4 per cent in the exhaust passage. Losses in the exhaust passages, however, have no influence on the thermal efficiency of the engine. In order to arrive at the influence of varying proportions and speeds on the efficiency it would be necessary to determine separately the losses during the expansion stroke for a whole series of engines, varying only one factor at a time. No such investigation has, to the knowledge of the writer, been undertaken.

Clerk, however, has determined very carefully the losses with varying temperature in one engine, and his results, combined with other material, most of which will be found reported in his treatise on gas engines, can be made applicable also to other engines.

Method Employed By Dugald Clerk In His Experiment

The formula for cooling loss developed later by the author from the published work of Clerk and others, while based on purely theoretical considerations, has nevertheless been found to represent fairly both the results of careful experiments and general experience, and its presentation at this time would therefore seem to be abundantly justified.

Clerk equipped an ordinary gas engine with a contrivance enabling him momentarily to close the inlet and exhaust valves while the engine continued to run. A series of recompressions and re-expansions of the same burned charge took place in the cylinder.

With no cooling and no friction losses the recompression ought always to carry the gas temperature back to its value at the beginning of the previous expansion. As a matter of fact, there is a constant falling of the temperature between certain points. By means of calculation or determination of the temperature at one point, definite temperature values can be assigned to all the other maximum and minimum pressure points on a diagram and an estimate of the actual temperature drops and the average temperatures during the strokes can be made. With the aid of the speed of the engine it is also possible to give the results in terms of reduced temperature drops per second corresponding to certain average temperatures.

Curves reproduced from Clerk's work show reduced temperature drop per second on the cold engine running light at 120 r.p.m. for a full expansion stroke and for the upper 3/10 expansion stroke. Also for the hot engine running light at 160 r.p.m. for the full expansion stroke and loaded during the upper 3/10 expansion stroke. The intersection of the curves with the temperature axis gives the mean temperature of the wall. There are, then, four curves referring to two different ratios of cooling surface to included volume and to four different wall temperatures. The average wall temperature shown for the whole stroke is only about 60 deg. Cent. (140 deg. Fahr.) at light load, and 200 deg. Cent. (392 deg. Fahr.) at heavy load. At heavy load the average temperature of the combustion space and adjacent parts is as high as 380 deg. Cent. (720 deg. Fahr.).

The expansion work in an engine cylinder is directly connected with the temperature by means of the specific heat. On the other hand, the work can be directly evaluated from the indicator diagram. In this way the specific heat of the gas in the cylinder at various temperatures can be ascertained.

The increase of the specific heat with the temperature is not uniform. It is considerable at lower temperatures, but almost nil at higher temperatures. Clerk in his original paper deems this behavior partly due to delayed combustion, and hence considers his specific heat values as merely "apparent."

Very thorough investigations of the specific heats of gases have been carried out by Nernst and his pupils. From these it would appear that only carbon dioxide with certainty behaves in the manner indicated by Clerk's experiments. The specific heat of all other common gases, even that of superheated steam of sufficiently high temperature, shows rather a linear increase with the temperature. For the mixture used by Clerk the specific-heat values he gives seem to be too high, at least at lower temperatures. This is the opinion also of the Gaseous Explosion Committee of the British Association. Yet the deviations are not very great, considering the accuracy possible. By means of his heat values Clerk has succeeded in accounting very satisfactorily and in a new and striking manner for the heat balanced in several combustion engines. In the illustrative examples figured in this paper these values have at times

been used. This can be done without question when only general laws for design are to be established.

Clerk gives the average composition of his combustion gas as follows:

	Volumes
Steam (assumed gaseous)	11.9
Carbon dioxide	5.2
Oxygen	7.9
Nitrogen	75.0
	100.0

The molecular weight of this mixture would be 27.96, or practically that of pure nitrogen, and the weight of 1 cu. ft. at 0 deg. Cent. and 760 mm., 0.078 lb.

The difference between the two series of specific-heat values given in a table shown amounts to about 10 per cent in the middle of the range, but is barely 1 per cent at atmospheric temperature and less than 2.5 per cent at 1500 deg. Cent. (2700 deg. Fahr.). With the aid of Clerk's specific heats the cooling curves have been obtained which give the cooling loss during the whole expansion stroke, reduced, however, to heat units per unit weight of gas per second. If, then, we compute the work theoretically obtainable from 1 lb. of gas with the temperatures and the expansion occurring, and if we compute the heat necessary to raise 1 lb. of gas from the temperature at the end of compression to the temperature at the end of the explosion, we can derive the actual expansion work as well as the percentage cooling loss. This, however, applies only to the Clerk engine.

Application of Clerk's Heat-Drop Curves to Other Engines

Influence of Surface-to-Volume Ratio. — Clerk's experimental engine had the following dimensions:

Cylinder diameter, inches	14
Stroke, inches	22
Total cylinder volume with full-out piston, cubic feet	2.41
Total cooling surface with full-out piston, square feet	11.2
Square feet of cooling surface per cubic foot of volume	4.64

Now, the most simple assumption to make with regard to cooling losses is that they vary directly as the ratio of surface to included volume. For this assumption there is considerable support in the results of experiments with explosions in closed vessels.

As far as experimental evidence goes, it then certainly seems to counsel the assumption of direct proportionality between heat loss per unit time and the ratio of surface to included volume. For geometrically similar vessels this ratio varies inversely as the linear dimensions. For similar engines running at the same number of revolutions the cooling losses would then vary inversely as the cylinder diameter. This has led to the conclusion that the cooling losses could be reduced almost to zero by employing sufficiently large dimensions. How unjustified this is will appear on some further scrutiny.

Influence of Speed

In the derivation of the heat-loss curve from Clerk's experiments it has been tacitly assumed that the heat loss varies directly as the time. No other assumption with regard to heat transfer has ever been made. With all other conditions equal, the heat loss in an engine should then vary inversely as the revolutions per minute. It is important, however, to note that all other conditions should be equal. It is known that if an engine is speeded up something may be gained in efficiency, yet not as much as should be expected if the heat loss dropped in direct proportion to the increase in speed. The reason for this is often given as increased turbulence with increased speed. This would, of course, increase the convection losses. If the valves are correctly located and correctly proportioned there should be no more turbulence at high speed than at low speed, unless the turbulence is intentionally increased in order to accelerate combustion.

For the same engine an increase in revolutions per minute means an increase in piston speed and an equal increase in gas velocity along the walls. The old idea was that the coefficient of heat transfer from gases increased directly as the square root of the rubbing velocity of the gas. We can probably do no better in the present connection than adhere to this old idea, even though it expresses the relations somewhat too simply. We should, then, put the heat loss directly proportional to the square root of the piston speed. Consequently, if the known heat loss of a certain engine be denoted by L^o, and its surface-to-volume ratio and its piston speed and revolutions per minute by R^o, V^o and N^o, respectively, then for another similar engine with values R, V and N, working under the same temperature conditions, the heat loss

$$L = L^o \times \frac{R}{R^o} \times \frac{N^o}{N} \times \sqrt{\frac{V}{V^o}} \qquad \ldots\ldots(1)$$

This might be checked up on the experiments undertaken by the British Institution of Civil Engineers with three engines of similar proportions but of different size. One of these engines—the largest one—appears to have been identical with the Clerk experimental engine dealt with in this paper.

For these three engines Dugald Clerk, who was a member of the investigation committee, gives the following as the most probable values of the indicated horsepower in per cent of total heat supplied:

Engine	L	R	X
Indicated horsepower, per cent.	31.8	33.7	34.7

By means of his diagram method he arrives at about 16 per cent as the most probable average value of the cooling loss during the expansion stroke for the X engine. Applying Formula (1) to this value we find the following:

Engine	L	R	X
Figured cooling loss, per cent.	19.9	17.9	(16)
Excess over 16 per cent as figured	3.9	1.9	..
Excess from indicated horsepower, measured	2.9	1.0	..

It must be admitted that the agreement is about as good as could possibly be expected with engines of so widely varying dimensions. The agreement, for that matter, is still better if instead of Clerk's values for the indicated horsepower we adopt these reported by the committee as a body. These are:

Engine	L	R	X
Indicated horsepower, per cent of heat	31.0	32.9	34.8
Difference from value for X...	3.8	1.9	..

The agreement with the figured values is almost exact. Too much importance, of course, should not be attached to this close agreement. Yet, in the absence of other methods of figuring cooling losses, the use of the simple formula here derived would not seem irrational.

In the form just given the formula is serviceable only for comparing with each other engines working under similar temperature conditions, with similar fuels. It does not take into account variations in expansion ratio or in maximum temperature; nor does it give absolute heat losses in heat units per unit weight of gas.

Assuming a certain maximum temperature, or calculating it approximately with the aid of specific heats, it is possible to estimate from the expansion ratio of the engine the temperature drop during the expansion by the use of an assumed polytropic exponent. From this we get close enough for our purpose the mean temperature during expansion as an arithmetic average. The corresponding heat loss C is read from a curve shown, and it is the loss in B.t.u. per pound or calories per kilogram of gas used for an expansion stroke lasting one second. To get the loss for any other duration of stroke it is simply necessary to multiply C by the actual duration in service. If the actual revolutions per minute is N, this duration is 30/N. The surface-to-volume ratio in the Clerk engine was 4.64 sq. ft. per cubic foot, and the piston speed at 160 r.p.m.—the speed at which the curve applies—586 ft. per minute. Consequently, for any engine of surface-to-volume ratio R and piston speed V the expansion cooling loss in heat units per unit weight of gas used is

$$L = C \times \frac{30}{N} \times \frac{R}{4.64}\sqrt{\frac{V}{586}}$$

or

$$L = 0.267\ (CR/N)\sqrt{V} \qquad \ldots\ldots(2)$$

In Formula (2) R is expressed in square feet per cubic feet, V in feet per minute, and N in revolutions per minute, while C can be either in B.t.u. per pound or calories per kilogram, or in any other units for which a C curve is available.

In these days of rapid internationalization, with cordial interchange of ideas between France and the English-speaking countries, especially in the field of aeronautical engines, it may be advisable to give the formula also in metric units, as follows:

$$L = 1.14\ C\ (R/N)\sqrt{V} \qquad \ldots\ldots(3)$$

where R is in square meters per cubic meter and V in meters per second, or

$$L = 114\ (CR/N)\sqrt{V} \qquad \ldots\ldots(4)$$

where R is in square centimeters per cubic centimeter and V in meters per second.

Finally, if R should be given in square inches per cubic inch, which is more convenient in most cases,

$$L = 3.2\ (CR/N)\sqrt{V} \qquad \ldots\ldots(5)$$

where V is the piston speed in feet per minute, as is customary.

Application of the Cooling-Loss Formula to Actual Cases

Assume in the first instance that the piston speed does not vary. Particulars of series of such engines for a piston speed of 1,000 ft. per minute and a bore-to-stroke ratio of 1:1.5 are given in the accompanying table:

Engines With Piston Speed of 1,000 Ft. Per Min. and Stroke-to-Bore Ratio of 1.5

Diameter, inches	3	10	15	30	42
Stroke, inches	4.5	15	22.5	45	63
R.p.m.	1,333	400	266	133.3	95

In this case the revolutions per minute vary inversely as the diameter, and so does the surface ratio. Consequently, for the same C, L is constant. Thus, as far as the formula for the same expansion ratio and the same maximum temperature goes, the cooling losses, and hence the indicated efficiency of these engines, would be the same for all dimensions. Actually, in order to avoid cracking of the metal, the cooling will have to be much more efficient for the larger engines. If they are double-acting, then even the pistons will be water-cooled. Even so, the maximum temperatures and maximum pressures will have to be kept down. The larger engines will therefore have a tendency to be rather less efficient than the smaller ones. On the other hand, with very high values of N the combustion is likely to consume a large part, if not the whole, of the stroke. In many cases, in fact, a good deal of the combustion will take place in the exhaust pipe. This can be prevented by extremely efficient carburization and ignition. Yet, on the whole, the likelihood is that, with the same compression, the best efficiencies will be found in the middle of the range. This would seem to be borne out by experience.

It may, however, be said that unvarying piston speed for all dimensions does not correspond to actual conditions. In some aeroplane and automobile engines piston speeds are found approaching, if not exceeding, 2,000 ft., while it might perhaps be conservative to let the piston speed of very large engines remain below 750 ft. Suppose that at the large-size end the piston speed is half of what it is at the small-size end. The number of revolutions at the large-size end would be only half of what it would have to be to limit the cooling loss to its value at the small-size end, piston speeds being equal. This would tend to make the cooling loss twice as large at the large-size end. On account of the lower value of the piston speed this loss is reduced in the ratio of

(*Continued on page 532*)

The Old Man Takes a Hand in Reorganization of the Commercial Department

Had Been Browbeaten Into An Attitude of Diffidence, but, Figuring That You Can Lose Nothing When You Actually Have Nothing, He Decides to Come Back

By S. G. ADDISON

The manager at Blankville is an old-timer in the gas business. He is essentially of the engineering type—the, for some years, greatly scorned conservative type.

He was a good hand at making gas, and he knew something about its conduct after it left the works, but he had been convinced that he knew nothing about selling it.

You've got to be up to snuff nowadays to sell anything, they told him, else you go out of business. He wasn't altogether convinced, but he let himseff be argued into permitting them to stage a live exhibit, and the results *in names secured* left him breathless.

Always Timid on Live Exhibits

This matter of live exhibits had always been one of his pet oppositions. Every time he thought of one his mind's eye pictured explosions and every other calamity possible from a misuse of gas. And he pictured the damages his company would have to pay.

Hence when he was apparently proved wrong in this particular he ducked altogether. Everything was left in the hands of the new commercial manager, Percival Pepper, late of the city's foremost department store.

What Percival didn't know about gas and gas appliances was just about as much as everyone in the world who had interested himself in these matters ever had learned. But he sure could set up a stand of neckties, he had the approach, and he was a most excellent elbow bender.

Didn't Work Wonders But Held On

It must be confessed that Percival didn't work wonders in the commercial department. But the growth of the city covered his deficiencies and the company got automatically all the new business it could take care of, so Percival stuck, even though when the war came, on his advice, almost everyone else in the commercial department was bounced.

When the armistice was signed, the manager, the old man, began to get nervous. Conservatism, Percival Pepper would have stamped it, again.

He knew he had a considerable lead of essential war business. He knew, likewise, that his plant had been considerably extended.

"It's time we got busy," he opened to his commercial manager.

Percival's heels clicked. His eyes lighted. He was all efficiency, all "pep"—just as if he had been straining impatiently at the leash all these months waiting for such work that would let loose all the ambitious plans that had been hurtling through his fertile brain for months.

"I'll submit my plan within a week," he declared, confidently. "Also, advertise for some salesmen."

The old man held up a staying hand.

"I've been thinking," he suggested.

Percival smiled indulgently.

"It has seemed to me during these months when we were marking time in the commercial end, and I've had time to look back at our efforts in the perspective, that we were not travelling along the right path."

Percival looked solemn.

"Merchandising methods change overnight," he uttered sententiously. "We must, of course, follow radically different methods from those in use when we left off."

"Just so," agreed the old man. "In house heating, for instance—that's our immediate possibility just now—we were selling heaters of the portable type principally, the kind you connect to a gas jet with a flexible tubing."

Percival thought he saw the trend.

"Flexible tubing has received a black eye in the past," he conceded. "But there is excellent tubing to be had to-day; absolutely accident proof."

Wants Gas Sold; Not Appliances

"That is not the point," differed the old man. "We sold a lot of those small portable heaters in last winter's cold spell. How many of them are working right now in this chilly weather?

"But a small proportion, I'll warrant."

"Why?"

"Because the tubing after a winter's use and a summer's disuse is either frayed or misplaced. The owners of those heaters intend to use them again, intend to get new tubing, but from day to day it is overlooked.

"Meantime our gas is not being used, and meantime they are ready victims, especially on a particularly chilly day for a slick electric salesman with one of those portable heaters that I admit myself look mighty attractive."

Percival Pepper was a quick thinker.

"We'll concentrate at first on flexible tubing," he declared. "Take it right up to their front doors and sell it then and there."

"Why not do it right while we're at it?" snapped the old man somewhat querulously. "Sell them a

heater that is not subject to idleness every year from lack of some little overlooked kink or other.

"The portable heater of the flexible tube kind is always a useful thing to have about the house, but mainly for the transient population. The cold room is known to any one who has lived in a house a year. We'll continue to carry the portable type, but the type we'll concentrate our efforts on selling is the type that is permanently tied on to the gas system by permanent iron piping."

There was something in the old man's tone that caused Percival Pepper's self-esteem to sag considerably. Percival was not stupid. He long knew the commercial efforts of his company were principally froth with very little substance underneath, and that there could not be anything different so long as men so superficial as he were given full sway in their respective departments. Every year he had expected his wings would be clipped and full authority taken away from him. He felt that his premonitions were coming close to realization at the present moment.

Another Immediate Call

"In lighting," laid down the company manager, "it may be said we can wait. But we cannot. The electric people are temporarily off their stride. If we desire to take advantage of this we must act quickly. The Fuel Administrator has been advertising us. He is already stopping and it's as certain as fate we won't advertise ourselves."

Percival Pepper agreed.

"Now where are we in industrial fuel? How much of our own business is traceable to our own brains?"

"Every foot of industrial business on our lines was written by our man Jones," retorted the commercial manager a trifle heatedly.

"Where's Jones now?"

"With the shipbuilding company."

"Will he come back?"

"No."

Where They Fell Short In Industrial Fuel

"I'm glad of it. We're going to adopt a new policy in the industrial end. Previously it was a sort of a partnership between us and the industrial appliance manufacturer, with the latter's man really making the sale. We will follow one of two courses in the future. Either we will put it up to the manufacturer exclusively and co-operate and assist him on service—a thing we haven't done in the past—or get a real industrial man of our own, not a mere salesman, and do it all ourselves."

Percival Pepper began to think that in the new scheme of doing things he did not fit at all, for, be it remembered, Percival was bright and recognized his limitations.

"Now, first off," continued the old man, "there is the State Fair in our town. We were not planning an exhibit, but the armistice has changed everything. We will take space."

"Fine," exclaimed Percival Pepper. "We have a raft of stuff to put on."

"And we aren't going to put it all in."

Percival Pepper was astonished.

"Ten years ago you fellows told us we were in a groove. You've been in one ever since. We're going to do things different.

"If the exhibit was left to you, you'd pile a close battery of lamps in one corner, line up ranges along a wall and devote your main attention to the bean bowl. You've been doing that regularly.

"We're going to show less, and only the latest, and in the surroundings they will encounter in the home. We will show several rooms: Parlor, bedroom, dining room and kitchen, each equipped, but not overequipped, with all the gas appliances and fixtures that pertain to them and no more. There'll be as many gas lamps in each as properly belong to them, but not in such numbers that a person examining one will get his eyebrows singed from the one crowded within the next foot of it."

"Is there anything more?" inquired Percival Pepper.

"Nothing just now," answered the old man.

The Effective Window Demonstration

By I. R. Merritt

The staged demonstration is an improvement on the regular window display as the motion picture film is an improvement upon the stereopticon. The demonstration supplies the necessary human appeal which is so often missing from the cold and actionless window display. The window may feature a line of goods which is partially or wholly new to the public, and although a plentiful supply of adjectives may be employed to create sales, the public has to imagine just how different, or useful, or ornamental, as the case may be, the articles will prove to them. We are not all playwrights or authors with imaginations ready to respond at our command, so we generally let such opportunities slip out of our fingers, leaving it to "George" to try the article out. This is where the staged demonstration comes in handy.

But there is a right and a wrong way of staging a demonstration. The demonstration, like every other form of salesmanship, has its rules. And rules, made to be kept, are equally liable to be broken, so the gas company should bear in mind the mistakes made by other concerns in this connection. It is only by profiting by the experiences of other advertisers that the gas company can avoid its errors.

In one downtown showroom window as I passed was a man demonstrating a gas cooking stove. That in itself constituted enough action to keep the passers-by interested, but for some unexplainable reason a monkey was allowed to do whatever he pleased. The result was that everybody was amused by the monkey's antics at climbing into inaccessible places. A man may be superior to a monkey in most things, but when they are side by side and onlookers are in the mood for entertainment, good night, man. The only man I know who might succeed is Charlie Chaplin, but he is a comedian, not a demonstrator. Beware also of snakes, parrots and other creatures of the forest, stream and field.

Demonstrating gas household appliances calls for perfect harmony on the part of the demonstrator. In this particular case the woman wore a dirty apron over a white waist that had lost its former freshness. Women may have been convinced of the time and labor saved by this modern iron, but they could not forget the unclean linen worn by the woman in charge. A little thing like this sticks in one's mind longer than anything else and generally prejudices one against the article demonstrated.

We are mighty particular about what we eat when we see it in the

process of manufacture. We may shut our eyes to what is served in public eating places, for the good and simple reason that we are not permitted to be taken behind the scenes. If we did, there might be a different tale to tell in many cases.

This man was making dough for a baking by gas demonstration. As he rolled his hands into the dough, it was noticed that his finger nails were corroded with thick, black dirt. Do not excuse the color of the nails by saying that he had put his hands into the chocolate—one of the ingredients of the cake he was about to make. It was not. It was dirt, pure, unadulterated dirt. How many people out of those who watched him took advantage of the invitation to sample some of his baking efforts? Very few people stepped into the showroom while I was there.

U. G. I. Takes Steps to Stir Up Lighting Business

It is evident that the United Gas Improvement Company of Philadelphia, Pa., is endeavoring to build up the lighting load by the newspaper ad. of Nov. 27, which is reproduced herewith. They are advertising gas lighting fixtures at reduced rates. Salesmen have also been placed on the street again.

When the Salesman Hopes His Prospect Will be Out

Ray Giles Discusses Salesman's Fright and Suggests Means of Overcoming It—How to Instill in the Door Attendant Just as Much Anxiety as You Feel to Shorten that Wait

A group of executives make it a point to confer occasionally with successful men in other lines, declares Ray Giles, in an article in *Printers' Ink*. One day some months ago they invited in a top-notch insurance agent.

Someone asked: "What is the greatest problem you have in dealing with the solicitors under you?"

The reply came very quickly: "My greatest problem is in keeping my men free from self-consciousness and downright fear. Every few days I go over each solicitor's list of prospects with him and we talk over each name he has to work on. The solicitor gets all primed up and apparently he is ready to go to it. You'd think that he was ready to tackle anyone. But the minute he gets near the door of some big man he begins to pray to heaven that the man will be out."

The smiles of understanding which passed over the faces of the insurance man's listeners offered evidence enough that most men battle at some time or another with selling fright.

With peace at hand, surplus of goods will replace shortage. The salesman must begin again to sell. Selling fright can be such a drag on the day's work that surely it is worth knowing how some have overcome it.

Selling fright as discussed here is by no means confined to the green man. The veteran salesman who rests satisfied with a medium-sized order when just a little more pushing would have secured him an order twice as large is a victim of selling fright in its most insidious form. He had courage enough to call and get a good order, but not enough to bring back what his house really deserved.

Selling fright is usually due to one of two major causes. The first is self-consciousness, timidity or lack of proper self-valuation. The other cause is lack of familiarity with the goods to be sold.

In attempting to write on this subject I have promised myself to cut out all use of philosophy, reference to self-hypnotism or fancy psychology. Here are some confessions of friends who have "wrastled" with selling fright:

During the conference which I referred to at the beginning of this article the insurance agent remarked that when he first started out he had poor luck. One day he found out why. A man he called on said to him, "K———, you have some personal problem that's worrying you. It shows in your face. I advise you to smile every day between nine and five whether you feel like it or not."

The insurance man thanked his adviser and went to it. By putting his personal problem out of his mind during working hours he had his full supply of courage for his job of selling.

Prices Reduced
Select your Gas Lights and Fixtures, at greatly reduced prices, while the limited stock lasts. Some suggestions:
Welsbach C. E-Z Lights—fit on your present fixtures—give lots of clear, white light—were $2.05, now $1.75.
Welsbach Reflex Lights—throw the light downward—great for reading and sewing—were $2.35, now $2.00.
Shades for these Lights, 35c up.
Table Lamps—beautifully finished, complete ready to connect—were $9.75, now $8.
Floor Standards (with shades)—rich, decorative—were $17.85, now $15.00.
Many more unusual bargains. These Lights save fuel—they use half the gas and give twice as much light as open-flame burners.
Connections to existing outlets free.
Broad and Arch Store and all of our District Offices.
The United Gas Improvement Co.

One of the most common causes of selling fright is the expectation or knowledge that the customer has a definite and strong objection which he will bring up at some point in the interview. Right here many salesmen use the wrong tactics. They try to frame the interview so that the customer will get no chance to voice his objection. This shows plainly enough that the salesman has selling fright. And his fright causes him to make a serious mistake.

A salesman whose income ran into five figures told me how he overcame this form of selling fright. One day, he suddenly realized how this kind of stalling interfered with his selling. He decided to take the bull by the horns. His method went to the extreme. He had found that price often loomed big in the prospective customer's mind. He picked out a man to whom he thought his price would be a hurdle. Sitting in the objector's office, he began: "I dropped in to see you about taking on our line." Here he paused for an instant and eyed the victim speculatively. "But, of course, it will cost you a lot of money;"

The prospect blinked a little and then began to get red. "Well," was the reply, "what of it? Don't you think I have the 'lot of money'?"

Thereafter the salesman stopped pussy-footing on buyers' objections. By taking hold of them right at the start he has found that generally the objection very shortly vanishes in thin air.

Selling fright often attaches to a buyer the wrong kind of a reputation. One case in point will illustrate a common experience. A Western buyer had the reputation of wanting to buy only in small quantities. A salesman coming for the first time into that territory had convinced himself that this customer would be better served if he would buy several times his usual quota of a certain kind of goods. The salesman expressed his belief to some brother salesmen. They laughed at him. He landed in the big man's office. The big man looked rather bored. The salesman began: "Mr. S——, I want to talk to you about buying $50,000 worth of our goods in one shipment!"

The big man leaned forward with sparkling eyes. He smashed his fist upon the table. "Good!" he said. "That sounds like real business." Then, confidentially, "Say, d'ye know—I get tired of folks running in to see me all day long about $200 worth of this and $1,000 worth of that!"

Looking back, it is easy enough to guess what had happened. A few salesmen who had selling fright and were content to accept little orders had given the buyer a reputation for ordering small. One man with real courage showed them how wrong they were.

Two more instances of the rewards for going over the top:

A salesman on taking on a new territory found that buyers commonly preferred to buy his kind of goods from a factory nearer by. He decided to open his talk in this fashion: "Mr. Smith, if distance is no barrier to you, I'd like to talk to you about taking on our line." More commonly than not the answer came, "Oh, I don't know why a few extra miles should stand in the way of our doing business together."

Again, a prospective customer told a salesman that his stuff was no good. The salesman began to laugh heartily. When he caught his breath he replied: "I've just come from a customer who says that he knows our stuff is rotten!"

The prospect joined in the laugh. "I guess they're not that bad," he said, opening the doors wide for a selling talk.

Several illustrations of this kind are given because they illustrate two important points. One is, that the more the salesman tries to dodge an objection the more afraid he becomes that he may not be able to meet it at all. The other point is that the salesman's willingness to handle an objection immediately and courageously makes the buyer feel that the objection isn't a very real one after all.

That Enervating Wait

Probably one of the most prolific sources of individual cases of selling fright is the sentence, "Mr. Jones will see you in a few minutes." The salesman sits down and begins to kick his heels together. Minutes pass by. The salesman begins to think over what he is going to say. Tame stuff—how can he bolster it up? Will he really get away with it? As the wait lengthens, his spirits drop. Selling fright opens the door very softly and sneaks in.

When this happens, perhaps the best thing to do is to tell the switchboard lady that Mr. Jones is to be sympathized with; you'll call later, or on some other day.

One salesman I know always carries with him an absorbing book on some subject apart from business. When he has to wait he gets out the book right away and begins to read with all his might and main.

When Mr. Jones is finally ready, the salesman goes in to his room as fresh and spunky as when he first presented his card.

Very often, "Mr. Jones is off somewhere in the factory." In mentioning this situation an officer of one company advised his men never to sit down. "To seat yourself," he says, "is to inform the telephone girl or window clerk that you are quite reconciled to a wait. To stand up or walk up and down advertises the fact that you don't see why Mr. Jones should not be looked up with vigor and dispatch. By standing up or pacing the floor nervously you also irritate slightly the attendants and thus make them anxious to dispose of you as quickly as possible."

Self-consciousness is considered by many the most ridiculous jellyfish in the world—it "gives" under so little pressure. Often a trivial circumstance enables the salesman to make this discovery for himself, and an immediate cure takes place.

A young salesman employed by a famous house hit upon an idea which caused the board of directors to summon him for a discussion. The salesman didn't mind his mental tremors so much as the fact that his legs became suddenly hollow. On entering the directors' room he actually stumbled over a rug and fell before their eyes. The formality of the situation immediately thawed. Two august directors arose to help up the unfortunate. Finding that they were human beings in spite of their epaulets, the salesman immediately and automatically relaxed and went to it.

Selling fright can often be fought right across its Hindenburg line by taking drastic measures. A salesman had called repeatedly but without results on one of the hardest buyers in a certain State. On a pleasant spring day he called again. He was told that his man

(*Continued on page* 535)

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CONTENTS

GAS INDUSTRY MAY BE MEANS BY WHICH AMERICAN SCALE OF WAGES MAY BE RETAINED, WHILE NATION COMPETES SUCCESSFULLY WITH EUROPEAN NATIONS IN THE FOREIGN MARKET. BY EDWIN DEAN 521

GREAT EXPANSION COMBINED WITH A LOW STROKE-TO-BORE RATIO FOUND IN GENERAL CONDUCIVE TO BEST EFFICIENCY IN INTERNATIONAL COMBUSTION ENGINES 523

MERCHANDISING GAS 526

THE OLD MAN TAKES A HAND IN THE REORGANIZATION OF THE COMMERCIAL DEPARTMENT.. 526

WHEN THE SALESMAN HOPES HIS PROSPECT WILL BE OUT 528

EDITORIALS 530

NEWS OF THE GAS INDUSTRY 433

PERSONAL NOTES 438

SOCIETIES AND ASSOCIATIONS 439

CONSTRUCTION NOTES 439

Worthy of Encouragement

It was inevitable that it should come. Benzol, as a by-product of gas manufacture, has made its bid as a motor fuel. The Seaboard By-Product Coke Company is advertising benzol under a trade name as a motor fuel. Its claims to favor are substantial: Fifteen to thirty per cent more mileage, less carbon and more power than gasoline.

Other companies, it seems, must take the same step, or pass into the junk heap without compensation thousands of dollars worth of valuable equipment. The war need has ceased, or is ceasing. If we continue to make benzol the motor field is our great field of disposal.

The big problem will be that of distribution. This problem may present many obstacles. It may be the source of almost hopeless discouragement. But the market is there. We have but to find the means of getting to it.

The departure is a praiseworthy one. More is involved than that of merely obtaining a return on moneys invested primarily and essentially for war purposes. It is a step toward conservatism.

The gasoline supply is already sorely taxed. The demand for it, or an equivalent fuel, will increase monthly in tremendous volume. The continuance of the sources of gasoline supply are but a matter of decades, we might even say years. Their life can be prolonged if benzol steps in to help out.

They Are Beginning to Come Back

Already those who went away to war are beginning to come back. The sorely-tried gas manager's eyes must glisten as he contemplates the array and recommendation of the vast number who daily become available for work and are actually seeking it.

We have hobbled along, practically crippled, for want of technical help. In these groups being disbanded it can be found of a quality that almost amazes one. There are engineers, salesmen, fitters, gas makers and what not in great numbers. And they are ready to come back; are seeking work. Each day they dribble back to civil life, their discharges—the certificates of their great claim on all of us—tucked away in their pockets.

There is small need now to exhort the gas manager to get track of these men and to help them to places. We are all quite assiduous in discharging the tasks in which our greatest self-interest lies. And we need these men, have needed them for months. Their becoming available comes almost as a deliverance.

But as they are sent back in greater numbers the open situations may become more scattered and more remote. There will be need then to utilize every agency to bring the man and the job together. It is superfluous to say that no matter how much any of us may

do to give these men a legitimate "lift," we will not be doing one whit more than is our proper obligation.

Whatever facilities the AMERICAN GAS ENGINEERING JOURNAL has to offer are freely extended to companies seeking such men and to released soldiers, sailors and marines seeking connections. Most of these men left excellent situations to guard us, our children, our properties, and our liberties. Each as he did so realized he was jeopardizing not alone his economic future, but his very life. That they have been spared the supreme sacrifice is a blessing and a great good fortune that was not necessarily to have been expected by them or by us.

They are coming back. To our service they stood bounden to sacrifice even existence. Truly we can do nothing less than see to it, as they come back, that they get at least as good as they left. We owe them more; a debt and an obligation that cannot be measured.

Why So Indifferent to Industrial Fuel?

We are amazed to learn that in some cases gas companies are still indifferent to industrial fuel, in some cases actually hostile to it. Particularly is this amazing since we learn at the same moment that hundreds of orders for industrial appliances that were intended for war work are being cancelled.

There are two sides to the industrial fuel question. One is that of self-interest, the other is that of community obligation.

It is unquestioned in the minds of gas men who see ahead a few years beyond the present that the self-interest of any gas company rests largely in developing without delay an industrial load.

The community obligation of the gas company to develop an industrial load lies in the fact that it is a monopoly having in its hands an agency by which living costs in its community may undoubtedly be considerably reduced and mode of living considerably enhanced. We could point out that it has been shown that money can be saved in melting brass, in galvanizing, etc., but the products of these works go principally outside of the particular community. Its living costs therefore, while lowered by cheaper production of brass products, are lowered indirectly. But in bread baking, in candy making, in coffee roasting, etc., it has been demonstrated that the industrial use of gas lower production costs. Here is a feature in which the gas company by failing to push its industrial business directly contributes to needless waste in its community and unnecessarily high living costs.

We are now living in a new era. Of course, we sense this fact, but in a vague sense we do not altogether realize its existence. We must discharge competently our every obligation, and this includes more than merely making gas so that anyone who comes to us to get it can have it.

If we do not seek out and find what these obligations are others will locate them for us, and our indifference may then cost us dearly.

There is need in the gas industry of men of imagination, of broad comprehension. Doubtless they exist within our own ranks, but we have not given their councils the encouragement they deserve.

In the next few years we will have to utilize our brains and our foresight to a greater degree than we ever have before.

We are not a drab, unvarying, uninteresting business. We are an agency of tremendous possible value to our nation.

We must ourselves find the way to the realization of that tremendous value. Otherwise those of us in whose hands now rest the destinies of the gas industry will be ruthlessly brushed aside and more competent heads put in our place. Progress cannot tolerate sluggards.

Time to Emerge

Our New York contemporary, possibly seeking some agency to shoulder a quite man's-sized job on to, has upon two occasions within our memory put some quite sizable propositions up to the new American Gas Association to handle. This reminds us that since its formation, about six months ago, we have heard very little from the new association.

This is but natural and pardonable. Looking at the matter from hindsight we can see that a mistake was made in that it was not formed sooner. To have avoided such a mistake consciously would not have been humanely possible.

While the amalgamation was being discussed, and when it was actually effected, peace seemed a very remote possibility. Because of war pressure there was little need of hurry. The gas industry, fortunately, was well provided for in the way of guidance in this respect.

It is unfortunate that as things turned out, the American Gas Association was not formed sufficiently long enough to have gotten thoroughly on its feet by this time. But the armistice caught the whole country, every industry, napping. It is unfortunate, but not rightfully chargeable to any one or any association, that the gas industry was caught similarly unready.

The AMERICAN GAS ENGINEERING JOURNAL would rejoice exceedingly were the American Gas Association prepared to step out and assume its proper function of guidance at this time when broad council is so necessary. But it cannot approve any pressure that might force it to assume functions which it is not completely ready and equipped to discharge.

It must be remembered that this association is representative of the gas industry to a greater degree than any association has ever been in the past. When it

speaks the gas industry speaks. It would be deplorable if the very start of its career should be characterized by any unbaked utterance. The industry, at this moment, undoubtedly needs guidance and representation of the kind it should later be able to provide. But it is better that the association do nothing than that it adopt a stand or policy that is not based on exhaustive and complete study and sound reasoning. By not speaking at all, it at least assures that its future efforts will not be handicapped through skepticism and lack of confidence in the value of its counsel.

Great Expansion Combined with a Low Stroke-to Bore Ratio Found in General Conducive to Best Efficiency in International Combustion Engines

(*Continued from page* 525)

2. The upshot is that the loss would be about 40 per cent greater for the large size.

There is, then, absolutely no reason to look for high efficiency in large dimensions. High speed, even though connected with high piston speeds, is preferable, even from the pure efficiency point of view—provided the combustion can be effected satisfactorily. Strangely enough, the simple investigations here carried out will give, as a sort of by-product, some indications as to what it is necessary to assume in regard to combustion.

It will be assumed that the change in stroke-to-bore ratio is not consequent upon a change in expansion ratio. The question is: With a given expansion ratio and temperature range, how should a cylinder be proportioned for best efficiency? A basic cylinder of 5-in. diameter and 6-in. stroke, with the same total volume and the same clearance volume for all other proportions, will be considered. The expansion ratio may be 5—that of the Clerk engine; the speed, 1,200 r.p.m.; the piston speed will vary from case to case.

The cooling loss increases regularly with increasing stroke-to-bore ratio. The absolute magnitude of the loss is small and the extreme variation changes the thermal efficiency by only 4 per cent. However, this 4 per cent means from 15 to 20 per cent saving in fuel. In an aeroplane 1 lb. of weight would be saved in fuel for a 10-hr. flight for every horsepower of the engine output. This is not negligible, and will count more and more as longer and longer flights over sea or over enemy territory are attempted.

With full-out piston the surface-to-volume ratio may be less for large diameters and short strokes. The combustion space, however, will become more and more disk-shaped as the diameter increases; its surface ratio will be great, and the losses during combustion considerable.

Influence of Varying Stroke-to-Bore Ratio Consequent on Varying Expansion Ratio

The long stroke has in the popular mind become more or less associated with high thermal efficiency. The reason for this may be the high efficiency attained at a foreign test by certain motors having a remarkably long stroke. However, in these motors the long stroke was connected with a very high expansion ratio.

The next step is to investigate the influence of varying expansion ratio on engines of the same output and the same speed, the increase in expansion being brought about by lengthening the stroke. With increased compression and increased stroke the output per square inch of piston area will increase for the same number of revolutions. To obtain equal output the cylinder diameter will have to decrease with increased expansion ratio.

While the cooling loss increases 18 per cent, the indicated work increases 74 per cent. The value of high expansion, even though gained by increased stroke-to-bore ratio and decreased cylinder diameters, is hereby clearly demonstrated. For average conditions, however, a high-expansion engine would be more efficient with a large diameter and a short stroke than with a small diameter and a long stroke.

Character of Combustion in High-Speed Engines

If to obtain percentages an attempt were made to calculate the thermal efficiency of the engine by reference to the heat supplied during combustion, some very astonishing figures would result.

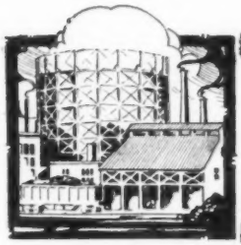
Clerk in his paper before the Royal Society concludes from his experiments on an engine running at only 160 r.p.m. that some combustion is proceeding even during his first re-expansion, i.e., after the whole normal expansion stroke and a whole intervening compression stroke. All experiments with closed vessels show gaseous explosions to take certainly not less than 1/40 sec., and this only with over-rich mixtures. With normal mixtures, it takes a much longer time than that to reach the maximum pressure. Turbulence accelerates combustion very much. Yet, such direct experiments as we have seem to show that with normal mixtures even a turbulent combustion would take all of 1/40 sec. One-fortieth of a second, however, is exactly the time occupied by the whole expansion stroke of an engine running at 1,200 r.p.m. We have, then, absolutely no reason to assume that the combustion is complete before the expansion commences. In the series of engines just considered it is far more reasonable to assume that it continues during the whole expansion stroke.

Assuming this, we might approach the conditions actually obtaining by figuring with an isothermal expansion. During such an expansion all the heat added passes directly into work.

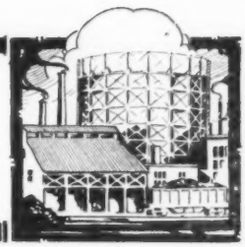
To increase efficiency in explosion engines running at very high speeds the main prerequisites are extremely efficient carburation, extremely efficient ignition and perhaps, if feasible, some means for increasing the turbulence during combustion.

It would hardly be good practice to increase turbulence by means of greater gas velocities and greater throttling losses in valves. The writer knows of an engine in which very complete combustion is secured by forcing the mixture through narrow grooves in the working piston. The design, however, involves an auxiliary piston driven by an auxiliary linkage, and it is possible that two inlet valves wth "clashing" currents might prove of some value. Here a considerable field for invention is yet open.

In concluding this paper the writer wishes to express his deeply felt gratitude to Prof. William T. Magruder, member American Society of Mechanical Engineers, who in the midst of extremely arduous war duties has not grudged the writer encouragement and advice.



NEWS OF THE GAS INDUSTRY



Appraisal of Pacific Gas Plant in Oroville Started

The work of appraising the gas plant of the Pacific Gas & Electric Company in Oroville, Cal., started Nov. 18. L. B. Cramer, representing the State Railroad Commission and A. N. Warburton and E. S. Jones, representing the Pacific Gas & Electric Company, are in Oroville undertaking the work. The work consists of inventoring the gas property of the company, and agreeing if possible upon the valuation of the various items.

Fuel Administration Limits Excessive Use of Natural Gas at Louisville

The United States Fuel Administration has issued an order restricting the consumption of natural gas at Louisville, Ky., to 1,000 cu. ft. a day per consumer in periods of cold weather, when the demand exceeds the available supply from West Virginia. At other times no restrictions are imposed. Application of the order will be under the direction of the Kentucky Fuel Administration. The National Fuel Administration also suggests that arrangements be made between the Company and the city of Louisville whereby the Company's gas manufacturing plants would be used in periods of emergency.

Meter Repairwomen More Efficient than Men

The Tacoma (Wash.) Gas Company's women meter repairers are made the subject of a half column article in the Nov. 3d issue of the Tacoma *Ledger*. Foreman William Dayton is quoted as saying:

"Why, the women helpers for the men doubled the output of repaired meters in two days. We have two women here who have gone farther in six months of service than male apprentices went in a year and a half.

"I think it stands to reason that the slender fingers of a woman can insert and remove the packing in the meters better than the thick fingers of a man. Be that as it may, the women have been mighty successful in our shop, and they can handle now almost every step in the rehabilitation of a gas meter for use."

Richmond Council Asked for Appropriation for New Boilers

Commissioner Graham B. Hobson has advised the finance committee of the Richmond, Va., council that an appropriation of $50,000 is needed for new boilers at the city gas works, and the appropriation must be made the first half of next year if the plant is to be properly kept up. The commissioner reported personally to the committee at the meeting. He said the gas situation was improving; that the record of the city's plant was really a remarkable one; there had not been a total failure of the gas supply in forty years.

Petroleum Men's Liberty Loan Total Enough to Justify Celebration

In these days of celebrations the Committee on Petroleum and Allied Products of the Rainbow Division of the Fourth Liberty Loan might almost have a celebration on its own account. By raising the sum of $28,484,000 in contributions to the Loan, it certainly earned the rght to celebrate.

To speak of millions is to convey little to the ordinary citizen of average means. He can scarcely conceive what he would do if he had one million dollars to his credit.

What did the United States Government do with this sum that was raised by the Committee on Petroleum and Allied Products?

The answer to this question will throw some light on what members of the trade did for their Government; on what these millions will buy, and on why we have reason to celebrate as having had a real share in making the celebration possible for others.

The Government applied the money to the payment of certain bills incurred by the Navy Department. It credited to the petroleum industry 60 Eagle Class submarine chasers, two destroyers, 100 6-in. naval guns, 100 3-in. naval guns, 60,000 6-in. shells, 100,000 3-in. shells, 2,000 depth bombs and eight torpedoes.

When we see a row of figures transformed into these agencies that helped to win the war, we begin to appreciate what was done by those who gave their money, their time, their comfort and convenience, without stint.

Plant Found Guilty of Contaminating Milwaukee's Water After Investigation Will Close Its Doors

Milwaukee has rested its case in fighting the Newport Chemical Works, Inc., for discontinuance of the contamination of the city's water supply caused by the issuance of contaminated effluent from the plants of the company. The matter is now in the hands of Government officials.

The Milwaukee Gas Company, The Milwaukee Coke & Gas Company, The Newport Chemical Company and other firms affiliated with the Newport Chemical Works, Inc., have promised Mayor Hoan that in the event no other solution is found the plants guilty of contaminating the city's water will close their doors.

Surgeon General Rupert Blue, asked to intervene in behalf of Milwaukee, has assured the city he will do all in his power to aid Milwaukee in its fight for pure water.

Ferdinand Schlesinger, president of the Newport Chemical Company and its subsidiaries, has informed Mayor Hoan that he will be pleased to furnish any officials the Mayor

may designate with passes that will grant them access to any part of the plants controlled by the Schlesinger interests.

A bit of the sensational was added to the Milwaukee fight for pure water recently, when two employees of the Newport interests reported to District Attorney Winifred R. Zabel saying that they were ready to issue sworn statements to the effect that they were instructed by superiors to discontinue the passage into the lake of sewage containing chemicals which caused the objectionable taste in the water. The statements were written and signed by the two employees whose names have not yet been released.

Massachusetts Commission Refuses Petition of Woburn to Reduce Rates

Declares Company Economically Managed—Price Allows Only Reasonable Dividend

The long awaited report of the Gas Commission on the increases in the price of gas for Woburn has been received, containing the statement that the company is receiving only a reasonable dividend and that the price as set by the company is a fair price. The report further says that the company is being economically managed.

In the report, however, the Commission declares that the times are abnormal and that when costs return to their normal level it shall be the duty of the company to reduce the price. Complaint can again be brought, the report points out, if the company fails to observe this obligation.

The report follows:

Boston, Nov. 22, 1918.

This is a complaint in writing, under section 162 of chapter 742 of the Acts of the year 1914, by the mayor of the city of Woburn of the price of gas sold and delivered by the Woburn Gas Light Company.

The complaint was filed on Feb. 19, 1918, and after due notice a public hearing, as required by law, was held in Woburn on March 1. 1918.

This complaint resulted from an increase in price by the company from $1.25 to $1.50 net per 1,000 cu. ft., which became effective Feb. 1, 1918. At the close of the hearing the Board stated that the issue raised was whether or not the price should be reduced, and, further, if upon their consideration the facts justified the Board in concluding that the price should not be reduced at once, the Board, might, having in view the return of normal conditions, withhold its decision rather than dismiss the complaint; and this course was followed by the Board.

On June 10, 1918, the company made a further increase in price from $1.50 to $1.60 net per 1,000 cu. ft., effective on June 20, 1918. The company brought this increase seasonably to the attention of the mayor and the Board. A protest was made by the mayor, but no affirmative action upon the pending complaint was deemed necessary by the Board in the light of prevaling conditions.

On Aug. 10, 1918, the company made a still further increase in price from $1.60 to $1.85 net per 1,000 cu. ft., effective as of Aug. 20, 1918. The matter was again called to the Board's attention by the mayor who filed on Sept. 21, 1918, a formal petition, "in accordance with provisions of section 162 and 163 of Chapter 742 of the Acts of 1914," for a reduction in the company's price and "to fix a maximum price for gas in the city of Woburn." The Board accordingly reopened the case upon the original complaint and heard the parties in Woburn on Sept. 27, 1918, upon this and the mayor's supplementary petition.

Up to the several increases of price noted above the maximum net price of $1.25 had prevailed since 1912. Prior to that year the price was $1.40, but after protracted hearings and pending a decision upon a complaint under the statute the present management of the company came into control and reduced the price to $1.25 net and the complaint was withdrawn. The company makes coal gas only and supplies a relatively small community, whose growth in population has for a number of years been inconsiderable. During the past two years, ending June 30, 1917 and 1918, its output has amounted to 22,009,600 and 23,096,300 cu. ft., respectively. The affairs of the company have been prudently and economically managed.

In common with other gas companies the Woburn company did not feel the full effect of the present costs of coal and labor during the earlier part of the last fiscal year, nor indeed their entire burden until the summer months of the current fiscal year. This was due to a substantial amount of coal on hand purchased at pre-war prices. Nevertheless, the operating expense for the last fiscal year exceeded the income.

In view of the cost at the burner, while the present costs of coal and labor prevail, the price of $1.85 will enable the company to meet the present emergency and does not, in the mind of the Board, impose an unfair burden on the consumer in this that it provides at best only a reasonable dividend on the authorized capital and a moderate amount for depreciation. Such amount as will thus accrue for depreciation in the price charged the consumers must not be diverted, however, to any other purpose but should be dealt with, as the Board has every reason to believe it will, as the trust for the plant's welfare.

In regard to the mayor's supplementary petition that the Board fix a maximum price for gas, it is to be remembered that the present proceeding is one to reduce the price and that the sole issue is shall the price be reduced and, if yes, to what extent. Save where a maximum price has already been established by the Board upon a proceeding under section 162, the initiative in establishng prices rests with the company unless it applies to the Board under section 163 to fix and determine the price. But the remedy of the public, if aggrieved as in this case by the company's action, is simple and prompt by a complaint under section 162. The existing conditions are admittedly abnormal and it is hoped temporary, at least to their present extent. When conditions improve it is the plain duty of the company to reduce the price as promptly as possible, and this complaint should be renewed if the company does not act.

There was some criticism at the hearing relative to the service supplied in certain sections of the town. The Board had this matter under investigation and finds that the troubles are largely local and are being remedied. In any event, they do not directly concern the issues raised in this proceeding.

The following is therefore adopted:

On the complaint in writing of the mayor of Woburn, under the provisions of section 162 of chapter 742 of the Acts of the year 1914, of the price of gas sold and delivered by the Woburn Gas Light Company and

on his supplementary petition relative thereto and to fix and determine the price of gas in Woburn, it is

Voted to dismiss the same without prejudice.

Washington Gas Light Company Given Permission to Issue Bonds

The Washington (D. C.) Gas Light Company has received permission from the Public Utilities Commission of the District of Columbia to issue and sell $662,000 fifty-year general mortgage 5 per cent bonds. The proceeds are to be used to repay the company for moneys advanced by it prior to Dec. 31, 1917, for extensions and improvements and to pay for construction now under way.

Receiver Appointed for Mt. Carmel Gas Company

Charles C. Lark, of Shamokin, Pa., has been appointed receiver for the Mount Carmel (Pa.) Gas Company. The receiver formally took charge of the plant on Nov. 18.

A petition of bankruptcy having been filed, Federal Judge Charles B. Witmer named Attorney Lark as Receiver.

Slatington Gas Companies Consolidate

The Slatington Gas Corporation, of Lehigh County, has secured all the real and personal property, corporate franchises, rights and privileges of the Slatington Gas Works, and will conduct business under the new title.

Employees of Galveston Company Assist in War Work

Set Aside 1 Per Cent of Individual Salaries Each Month

The employees of the Galveston (Texas) Gas Company will set aside 1 per cent of the individual salaries received each month in order that the fund thus formed be applied in various patriotic drives, such as the Red Cross drive, the united war work campaign drive and similar enterprises, according to a decision reached at a recent meeting in connection with the united war work campaign. $150 was subscribed to the united war work campaign fund by the adoption of this plan. A committee composed of I. J. Lightfoot, C. A. Goss and Mrs. A. M. Wilkinson was appointed to apply the money raised.

The Galveston Gas Company employs forty-two men and women, according to P. E. Nichols, superintendent in charge of the works and mains of the company, and it is thought that the sum set aside will amount to $40 or $50 each month, according to the number of men employed and the amount of overtime.

Minneapolis Gas to Go Back to Pre-War Standard

Gas furnished by the Minneapolis (Minn.) Gas Light Company will go back to its standard pre-war quality of 15 candle power light and 600 B.t.u. heat value, it was announced by A. D. Meedes, city gas light inspector. The discontinuance of the manufacture of toluol, a constituent of high explosives, is responsible for the change, Mr. Meedes said. The Minneapolis Gas Light Company has been under contract with the Government to manufacture large quantities of toluol. These contracts have been cancelled.

Officials of Massachusetts Gas Companies Inspect Development Work on Empire Property

J. L. Richards, president of Massachusetts Gas Companies, and some of his associates, including Robert Winsor, recently returned from a trip to West Virginia, where they went to inspect the development work that has been done on the Empire property purchased by the Massachusetts Gas Companies' interests about a year ago. The developments consist of three operations that are being opened up on a 10-ft. seam of coal of good quality, this being a part of the so-called Pittsburgh seam.

The company is also building a railroad, which has a charter under the name of The Indian Creek & Northern Railway Company, all of the stock being owned by the Massachusetts Gas Companies' interests. This railroad will not only be utilized to transport coal from the Empire property, but also from a large coal area beyond.

The New England Fuel & Transportation Company consummated last week, by paying approximately $750,000 cash, the purchase which they made some time ago of about 2,000 acres of Pittsburgh seam of coal adjoining their Federal property. The tract contains over 20,000,000 tons of good gas coal. This new purchase is considered an exceptionally good one for the Massachusetts Gas Companies' interests, for the reason that it can be worked from shafts already constructed on the Federal property.

When the Salesman Hopes His Prospect Will Be Out

(Continued from page 529)

had taken the day off to get his garden under way. The salesman secured the buyer's home address. Arriving there, he removed his coat and hat, placed them on the lawn in front and sauntered out back of the house.

The buyer eyed the salesman in amazement. The salesman began: "I called at your office, Mr. H——, but was told that you were here. As I can't get a train for several hours, and having no more calls to make, I thought I'd come here and see if you'd let me help with the spading."

The hard-shelled one loosened a grin. "Come ahead," he said. The two worked away, and when the salesman was ready to go the buyer laughingly pressed a real order upon him.

Startled Into Attention

Another salesman had been warned that the president of a certain gun plant was an almost impossible person to handle. In fact, the report went, one might as well stay away and spend the time on someone else. Arriving at the plant, the salesman was shown into the president's room. The president started right in to live up to his reputation. "Sit down," he snarled. Then he turned to read his mail. The clock ticked on. Apparently all thoughts of his visitor were out of his head.

The salesman finally arose in desperation and walked over to an open window. Before it was a table on which rested a loaded gun. Outside on an ash heap at some distance he noticed a sparkling tin can. Picking up the gun, he aimed and fired.

The president jumped up and ran over to him. "What'je shoot at?" he asked with immense interest.

The salesman told him.

"Hit it?"

"Yes."

"Good shot!"

"It's a peach of a gun," said the salesman, hefting the weapon appreciatively.

"You're the first regular fellow that's been in here in five years," said the president. "Come on upstairs and see how we make them." And the salesman left with a good order and a hearty invitation to return.

Related to this experience is the expression of one who is occasionally called upon to sell. "In my case," he confessed, "timidity and formality always went together. I guess they always do. You can't have the trembles over a meeting where acquaintance is ripe and informal. I have found that some little informal act breaks down any worry I may feel over meeting a new or difficult man. I may start an interview by sharpening a pencil over the prospective customer's wastebasket, or I may straighten a picture that hangs on his wall. A couple of times I have remarked that I have had no time to eat lunch. Then I would pull an apple out of my pocket and eat it while my selling talk went on."

In every salesman's list of prospects there is bound to be a proportion of names which present real problems. Each day's calls should be a judicious mixture of hard buyers and easy ones or enthusiastic customers. Before tackling a particularly uncrackable person it often helps immensely to talk with a customer of long standing who welcomes you as the perpetual life saver of his business.

So far we have said nothing about the only source of selling fright which sometimes is incurable. Cause: the salesman is not himself thoroughly "sold" on what he has to offer. Obviously, the only answer is to *get* "sold" or quit.

When the House Falls Short

Selling fright is not always due to greenness or thin skin of the salesman. Very often his employers fail to back him up in the way necessary to maintain his morale.

A simple way to handicap a salesman is to fail in providing sufficient selling data on the goods to be disposed of. The salesman may then well fear unexpected questions to which he has no answer.

One house, making splendid merchandise, spread a regular epidemic of selling fright among its men by its poor judgment in manufacturing the different items in its line in desirable proportions. When the salesmen came to take orders they never knew which items would be ready for immediate shipment and which would take two months in the making.

Another house insists on maintaining such a domineering attitude towards its dealers that the salesmen come and go, giving up the job as hopeless. One who has stuck and made good confesses that he frankly says to his trade, "Yes, I work for a bunch of mutts—but shades of Czar Nicholas, how they do turn out the good stuff!"

Instances of this character could be reeled off by the yard. Too big a territory often makes for selling fright, though the salesman may not admit it. With too big a territory the salesman cannot call often enough on his trade to keep well acquainted. And lack of acquaintanceship is at the bottom of much doubt and wavering.

Partly for this reason, one expert on sales has repeatedly induced manufacturers to cut salesmen's territories in half and double on the number of men on the road. At first the salesman whose territory is halved often kicks. But in every case so far he has shortly begun to produce more business out of the half of his old territory than he ever got from all of it!

When the house must rely on infrequent calls, it can at least use mailing pieces or letters to supplement the salesman's visits and help get the trade acquainted with the goods. Business-building letters written by the salesman himself for this purpose seem rare. Why do so many salesmen lack faith in their ability to help sell by correspondence?

Finally, the experienced sales manager takes steps to keep up the courage of his men while they are on their trips. No matter how strong they are, salesmen may become battered-in by continuous rough going. A cheery, newsy, confident letter from the man higher up is often of wonderful help. I have seen a blue, rainy day turn into a rosy opportunity on receipt of such a letter.

One manager I know made it a point to write each of his men such a letter once a week. He also worked on the assumption that every salesman comes back from his trips at least partially "unsold."

So he would nab each man as he returned and proceed skilfully to resell him the whole proposition from top to bottom.

May his tribe increase!

Arrangements for Illinois Gas Association Meeting Progressing Rapidly

Official Program Expected Soon

Arrangements for the big meeting of the Illinois Gas Association, to be held in Chicago next March, are progressing rapidly, according to an announcement from the association headquarters. It is expected that the official program will be out before the end of the present month.

Among the more important topics on this program will be the "New Bi-Products of Gas Meeting," a hitherto scarcely discussed phase of the industry. At a recent meeting of the board of directors this proposal was very thoroughly gone into, with the subsequent announcement that it would be dealt with in a very comprehensive manner.

In fact, at this recent meeting, a list of papers to be read at the March meeting was presented, and they are now being given full consideration. The committee declares that there is abroad keen recognition of the importance of keeping pace with the growth and diversification of the industry.

Indications so far point to the March meeting as probably one of the most momentous in the history of the association. The post-war situation is expected to make it of exceptional interest to the gas manufacturing industry.

Proposed Increase for Kankakee Suspended to March 31, 1919

The Illinois Public Utilities Commission recently suspended to March 31, next, the proposed increase in gas rates in Kankakee as proposed by the Public Service Company of Northern Illinois.

Lawrence Gas Company Given Authority to Increase Rates

Order of Commission Granting Petition

This is a petition by the Lawrence Gas Company, Lawrence, Mass., under the provisions of section 163 of chapter 742 of the Acts of the year 1914, to revise the former action of the Board relative to the price of gas sold and delivered by said company.

After notice by publication and by personal service upon the mayors of Lawrence and Methuen and the chairmen of the selectmen of Andover and North Andover, the Board gave a public hearing in Lawrence to the petitioner, the cities and towns and all other persons interested.

Upon a similar petition the Board on April 12, 1918, in view of the extreme costs of labor and materials, authorized the company to increase its maximum net price from 85 to 95 cents. Meantime the fiscal year of the company has closed, and a more intelligent review of its affairs and needs can be made. In common with other companies it did not feel the full burden of the increased costs until the latter part of that year, and, for that matter, in some important particulars not until after its close. At the hearing it was estimated that, at the present prices for coal and oil and the present scale of wages, the average cost of gas at the burner during the current year will exceed by over 20 cents the average cost of the preceding year. Due consideration must also be given to the fact that its coal bears an additional freight rate of $1.05 a ton as compared with companies having their works at tidewater, thereby adding 5 cents to the cost of the gas.

The need of further relief, in view of the facts, is manifest, and the price named in the following order is made to meet the existing emergency. But, as stated in the earlier decision, if experience demonstrates that it is either too high or too low, it should be reconsidered.

The following is therefore adopted:

On the petition of the Lawrence Gas Company, under the provision of section 163 of chapter 742 of the Acts of the year 1914 and the terms of a certain order adopted by the Board on April 12, 1918, relative to the price of gas thereafter sold and delivered by said company, for a revision of said action of the Board, after notice by publication and by personal service upon the Mayors of Lawrence and Methuen and the chairman of the selectmen of Andover and North Andover, and a public hearing, it is

Ordered, That the former action of the Board on April 12, 1918, fixing the maximum net price of gas sold by said company after April 1, 1918, at not exceeding 95 cents per 1,000 cu. ft., is hereby revised, and said company is authorized to charge for gas sold and delivered after Oct. 1, 1918, not exceeding $1.15 net per 1,000 cu. ft. for the duration of the war, unless meantime otherwise ordered upon complaint or petition, as provided by law, or upon the Board's own motion after notice and a public hearing.

By order of the Board,

ALONZO R. WEED,
Chairman.

Keokuk Gas Rates Raised 35 Cents Per 1,000

Keokuk's gas rate has been fixed at $1.60 per 1,000 cu. ft., an increase of 35 cents per 1,000.

This advance, which becomes effective at once, is the issue of a long controversy between the Keokuk (Iowa) Electric Company and the city council. The parties finally submitted the question to the State Board of Conciliation, created some months ago, upon the suggestion of the federal courts, to adjust such controversies.

Hearing on Brooklyn Borough Gas Case Ends— Decision Reserved

The rate case of the Brooklyn Borough Gas Company, which has been pending before the Public Service Commission for several months, is closed. Finis was written to the long-winded proceedings when the Commission announced that no more hearings would be held. Decision is reserved.

Residents of the Coney Island district, in which territory the company operates, were startled when the company applied to the Public Service Commission for permission to increase its rate for gas from 90 cents to $1.25 per 1,000 cu. ft. It based its claim to the higher rate on the decision of Referee Charles E. Hughes, who had been commissioned to investigate the rates for gas in the State. Mr. Hughes decided that statutory rates which did not permit a gas company to make a reasonable profit on its investment were to all intents and purposes confiscatory and therefore illegal.

W. W. Thompson, counsel for the Brooklyn Borough Gas Company, in his final argument before the Public Service Commission declared the company had shown by the testimony it submitted that its claim for an increase in the gas rate was fully justfied. He said the Commission had facts enough on record, including an appraisal of the company's property, to decide the case offhand. He insisted that his company was entitled to special consideration because it had always obeyed the orders of the Commission to the letter.

Mr. Thompson made the novel point that the Commission in a case of this kind ought to go ahead and change the rate within 24 hours after receipt of the application. If collateral conditions were such as to warrant a change of rates the Commission should do so without a hearing. This, he said, would apply to a proposed increase as well as to a proposed rdduction of the rates.

Assistant counsel for the Commission Jacob H. Goetz made no reply to Mr. Thompson's statement.

It is expected that the Commission will announce its decision within a few days.

Batesville Gas Company Seeks Increased Rates

The Batesville (Ind.) Gas Company petitioned the public service commission recently for permission to increase its rates to $1 per 1,000 cu. ft., and to increase its monthly minimum to $1.

Utah Company Does Away with Collectors

Shortage of man power and the precedent of other communities are given by the Utah Gas & Coke Company, Salt Lake City, as the reasons for the pending discontinuance of collectors by that concern. Notices that in the future the public must either bring the money for the gas bill to the company's office or must mail a check to cover the amount, were sent to the users with their recent bills. The same notice also contains the information that if for any reason the consumer fails to get his bill, it becomes his duty to notify the company, and that failure to receive the bill cannot be pleaded as an excuse to secure the discount allowed for prompt payment.

Gas Oil Tank with Capacity of 425,000 Gal. Completed Near Chicago

A gas oil tank, whose capacity is the equivalent of 525,000 gal. has just been completed at Niles Station, near Chicago. Its original function was that of a gas holder at Pontiac, Ill. No changes of consequence were necessary to adapt it to its present purpose.

Inability to Secure Pipe Leads to Adoption of Pumps Carrying Compressed Gas Through Plant System

Large users of fuel gas from the mains of the Public Service Company of Northern Illinois have met the current difficulty of procuring pipe in a somewhat novel manner.

The expedient adopted is a pump, by means of which the gas is compressed, and in that form driven through the plant system. The degree of compression fixed is dependent upon the additional quantity of gas required.

It is calculated that the cost of a larger pipe, even it were readily obtainable, would much exceed the amounts invested in the pumps.

Wife of Foreman at Belvidere Plant Presented Silver Teapot for Aid During Influenza Epidemic

During the prevalence of the recent influenza epidemic in Belvidere, Ill., Mrs. Betty Finley, wife of C. V. Finley, foreman at the gas plant of the Illinois Northern Utilities Company in Belvidere, assisted by her daughter, Miss Elizabeth, fired the boilers for two days and a half when the two helpers were laid up with the malady.

As an evidence of its appreciation of the aid that was given in the time of stress the company has presented to Mrs. Finley a beautiful silver teapot, upon which is engraved:

"In appreciation of war time service of Mrs. Betty Finley, who fired our boilers in an emergency. The first woman ever to perform this service for the Illinois Northern Utilities Company."

The handsome gift was sent from the head office in Dixon and has been delivered to Mrs. Finley by C. W. Saladee, superintendent of the Belvidere division. The family resides on West Locust Street.

At the time mentioned it was impossible to get immediately men to replace the helpers who had been taken sick, and Foreman Finley was left entirely alone to run the plant. To tide over the emergency situation Mrs. Finley volunteered her

services, her daughter also tendering her assistance, and for the time being they shoveled the coal into the furnaces and kept "the home fires burning," thereby avoiding a shutdown of the plant and making possible the continued delivery of the product to the homes and other places throughout the city.

Personal Notes

CHARLES O. PRATT has been honorably discharged from the Officers' Training Corps of the United States Army. Previous to entering the army Mr. Pratt was connected with the gas industry seven years, being in the employ of the Portland (Me.) Gas Light Company. He held the position of superintendent for the last three years.

HENRY I. LEA, consulting enneer, of Chicago, Ill., has disbanded his organization, and will close his office and practice Dec. 15 for the purpose of taking a long vacation, the need of which he has felt for some time. After the indicated date communications addressed to 1519 Peoples Gas Building, Chicago, will be forwarded to him.

W. H. FRITCHMAN, for years connected with the gas industry in various capacities as operating engineer, construction engineer, consulting engineer, etc., will terminate his connection as utilities engineer for the United States Housing Corporation within the next month. During this connection Mr. Fritchman had charge of the gas industries for the housing projects in the various cities throughout the country.

GEORGE E. ALLYN, for 16 years superintendent of distribution for the Providence (R. I.) Gas Company, died suddenly at his home, 383 Benefit Street, Nov. 22, from an embolism of the heart. He had recently been confined by an attack of influenza, but had returned to work. He was born in Brookline, Mass., July 19, 1873, and graduated from the Rindge Manual Training School in Cambridge, Mass. He then went for a year to the Lawrence Scientific School at Harvard at the end of which he was employed by the Cambridge Gas Light Company. Previous to 1902 he was connected with the Schenectady (N. Y.) Gas Company. His father, the late Horace A. Allyn, was superintendent of the company for many years.

WALLACE L. CALDWELL, chemist for the Pittsburgh Gas Testing Company, was appointed city gas inspector by the Birmingham, Ala. commission at a recent session. Mr. Caldwell's appointment became effective Nov. 19, and his salary, by a vote of the commission, was placed at $100 per month.

STUART ST. CLAIR, well known geologist, of Winchester, Ky., recently left for Bartlesville, Okla., where he will have charge of the work for the Treasury Department of the Government in regard to the oil and gas production in that State. He will return to Winchester later. Mr. St. Clair volunteered for the officers artillery school some time ago and was awaiting the call when peace was declared. Douglas St. Clair, president of the Combination Oil Company, who had volunteered for

the motor tank service, will remain in Winchester and look after the interests of the company.

J. F. Owens, vice-president and general manager of the Oklahoma Gas & Electric Company, has been re-elected a member of the Board of Directors of the Oklahoma County Chapter of the American Red Cross.

George Orcutt succeeds Eugene Brick as gas maker for the Brainerd (Minn.) Gas & Electric Company.

Charles P. Houghton, former second vice-president of the Los Angeles (Cal.) Gas & Electric Corporation, died Saturday Nov. 2, at the family residence, following a long illness. Mr. Houghton was born in Del Norte, Colo., Oct. 8, 1880, and when about 4 years of age was taken by his parents to Whitewater, Wis., where he was educated. The family removed to Los Angeles in 1896, and four years after his arrival here Mr. Houghton secured a position with the Los Angeles Lighting Company, the predecessor of the Los Angeles Gas & Electric Corporation. He rose steadily, step by step, until finally he became second vice-president, a position he held until about one year ago, when he was compelled to resign because of ill health.

John Ladrick, an engineer of the Cohoes (N. Y.) Gas Light Company, died Saturday, Nov. 6, at the Cohoes Hospital, after a protracted illness.

The Monroe (La.) Gas Company recently held the annual meeting of the stockholders at which all of the old board of directors were re-elected, and Guy P. Stubbs was elected in place of Louis Lock, deceased. Following the conclusion of the meeting of the stockholders, the board of directors met and re-elected all officers for the ensuing year: George G. Weaks, president; Oscar Nelson, vice-president; Carl McHenry, secretary-treasurer.

The Bay State Gas Company of Delaware held its annual meeting in Wilmington, Nov. 19. All the retiring directors were re-elected with one exception, that Newall Barr succeeds E. A. McSweeney, who resigned to enter the war. Officers were elected as follows: President, Thomas W. Lawson; vice-president, J. Frank Alle, and secretary-treasurer, W. Harry Miller.

The Denver (Colo.) Gas & Electric Light Company held its annual stockholders meeting Nov. 20, at which all the directors and officers who served during the year just closed were re-elected. No other business was transacted. Frank W. Frueauff of Henry L. Doherty & Company is president; William J. Barker, vice-president and general manager; Clare N. Stannard, secretary, and Harry Hughes, treasurer.

Societies and Associations

The Gas Sales Association of New England held its monthly dinner at the City Club Nov. 21. Representatives of about fifty New England gas companies were present. William Gould, governor of the association, presided, and urged the members to begin this year by increasing gas sales and promoting advertising. An address, principally on war topics, was given by William R. Balch, a Boston newspaperman. He outlined the efficiency of the German war machine which for 40 years prepared for the world war. He said that not until peace is signed will the war be over, and even then we must beware of "scraps of paper."

The American Society of Mechanical Engineers, Connecticut Section, held a meeting at Yale University, Nov. 21, at which many prominent engineers were present. The morinng was spent by informal meetings of the different members as they arrived from out of town. The meeting was opened at 2.30 p. m., at Mason Laboratory, with introductory address by the chairman, J. A. Norcross, secretary and treasurer of the New Haven Gas Light Company. This was followed by an address by C. C. Sibley, plant engineer, Marlin-Rockwell Corporation and G. E. Libbey of the firm of Hollis, French, and Ellen Hubbard, Boston, describing the new local power plants, which were visited later. At 3.30 an excursion was made by automobile to the Marlin-Rockwell power plant and to the Yale University central power heating plant. At 6.30 a buffet luncheon was served at the Mason Laboratory. The chairman, Prof. L. P. Breckenridge, opened the evening session in Lampson Lyceum at 7.30 with a short address, introducing the speaker of the evening, W. H. Blood, of the American International Shipbuilding Company, Philadelphia, who spoke on "The Building of the Hog Island Shipyard."

The Progress Club of the Brooklyn Union Gas Company held a get-together dance Nov. 22 at Trommer's Hall, Bushwick Avenue and Conway Street, Brooklyn, N. Y. The proceeds were donated to the United War Work Campaign. Music for the dancers was furnished by the employees jazz band, which later gave an entertainment for those who could not dance. It is estimated that about 1,000 persons were present. The officers are: George T. Velte, president; Frank T. Barmore, first vice-president; Robert E. Browne, second vice-president; George J. Heinz, third vice-president; Charles I. Hodgson, secretary; J. Percy Conklin, financial secretary; Harry Grogan, treasurer; Thomas Martin, marshal; S. S. Shelton, sentinel.

Construction Notes

First Shipment of Material for Enlarging Sunbury Plant Arrives

The first shipment of material for the enlarged gas-manufacturing plant of the Northumberland County Gas & Electric Company, Sunbury, Pa., has arrived. The new equipment when installed will have a generating capacity of 600,000 cu. ft. of gas every 24 hours and will give a total output of 850,000 cu. ft. daily when operated in connection with the present plant.

Brainerd Plant Now Ready for Winter

At the Brainerd (Minn.) Gas & Electric Company plant, all arrangements have been completed for winter, and no matter how severe the weather may become, Brainerd is assured of an uninterrupted flow of gas, for everything possible that human ingenuity can do to circumvent the elements has been done.

All the machinery has been thor-

oughly overhauled, and the two units recently installed are working in the best of shape now. An additional supply of coke has also been secured.

New Gas Oven Plant of Providence Company to be Ready for Operation Jan. 1

The new gas oven plant of the Providence (R. I.) Gas Company, which, when completed, will equip the company with a new process for making gas, will be ready for operation by Jan. 1.

Fires will be built in the new ovens within the next 10 days and the plant will be in operation by the first of the year.

The new building, in which the process of extracting trinitro toluol for the Government has been carried on, will probably be closed permanently, since the Government no longer requires the company to continue this work.

The building was built and is owned by the Government, and it will be left in such condition that it can again be used for the same purpose at any time that the Government requires. Only 10 men have been employed in this building, and some of these will be transferred to work in the gas company's plant.

New By-Product Coke Ovens for Indianapolis Company to be Ready About Jan. 1

J. Dorsey Forrest, general manager of the Citizens Gas Company, of Indianapolis, has just announced to the public that the forty new by-product coke ovens, which the public service commission some time ago authorized the company to finance, will be ready for operation early in January. It is estimated that they will increase the capacity of the company 4,000,000 cu. ft. of gas a day, or 50 per cent more than normal, and 35 per cent over the output of last year, when the demand was extraordinarily heavy because the people had not stocked up on coal for last winter.

For this winter the people of Indiana, due to much pounding on the subject by everyone, are well stocked with coal, and the use of gas in heating will not be extensive, it is believed by officials of the Indianapolis company. The same general situation seems to prevail also in other parts of Indiana, and with the coming of peace it is believed the coal and gas famines, except in certain peculiarly situated communities, are things of the past.

The Citizens Gas Company, however, is continuing to discourage the use of gas for heating on the ground that it does not have the capacity to take care of the peak demands in cold weather, and on the further ground that gas could not be sold for 60 cents a thousand cu. ft. by the Indianapolis company if the company were to invest an amount necessary to take care of cold weather gas consumption for heating purposes

Mr. Forrest says the gas supply this winter will be much better in the territory served by the company than last winter, because of the widespread stocking up by domestic consumers of their winter coal supply, and the increased capacity which the new coke ovens will bring the local company. The Federal Government has cancelled its contract to take some of the by-products of the company useful in the manufacture of explosives, but these by-products now will be diverted to the drug and dye industries.

In line with this attitude by the Indianapolis company many city officials throughout Indiana, assembled in conference at Indianapolis recently, acted to compel the use of natural gas only for domestic lighting and heating, because of the limited supply. During a program for a meeting at the Claypool Hotel, city officials of Muncie, Richmond, Newcastle, Elwood, Fairmount, Hartford City, Marion, Alexandria, Anderson, Tipton, Noblesville, Jonesboro, Summitville and Lynn discussed their gas problems, and arrived at the following conclusions:

Natural gas should be used this winter only for domestic lighting and heating.

Harry A. Garfield, Federal Fuel Administrator, should be asked to issue an order to that effect, applying to Indiana and Ohio, similar to an order he issued November 8, applying to Pennsylvania.

If, in view of the end of the war, the national fuel administration should hold it is without jurisdiction in the matter, then the public service commissions of Indiana and Ohio will be asked to issue such an order.

It is proposed to have Ohio cities join in the movement. John McPhee, city attorney of Muncie, says if manufacturing uses were stopped, natural gas pressure would be adequate for the winter. Evans Woollen, federal fuel administrator for Indiana, will be asked to present the matter to Garfield.

The conference was attended by John McPhee, city attorney; John R. Kelly, city controller; Ray Andrew and Charles Emerson, of the board of public works; H. D. Hartley, city councilman, and B. F. Deardorff, city engineer, all of Muncie; W. O. Bernard, of Newcastle, representing his son, who is city attorney, and Sylvester Davis, a councilman of Newcastle; Byram Robbins, city attorney, and John Pelz, of the board of works of Richmond; John T. Lewis, mayor, and Richard Broadbent, city attorney of Elwood; Charles T. Parker, city attorney of Fairmount; H. D. McAtee, mayor of Hartford City.

The Wayland Oil & Gas Company has declared an extra dividend of 2 per cent on its preferred stock, and the regular quarterly dividend of 2 per cent on the common. Both dividends are payable on Dec. 11 to stockholders of record Dec. 2.

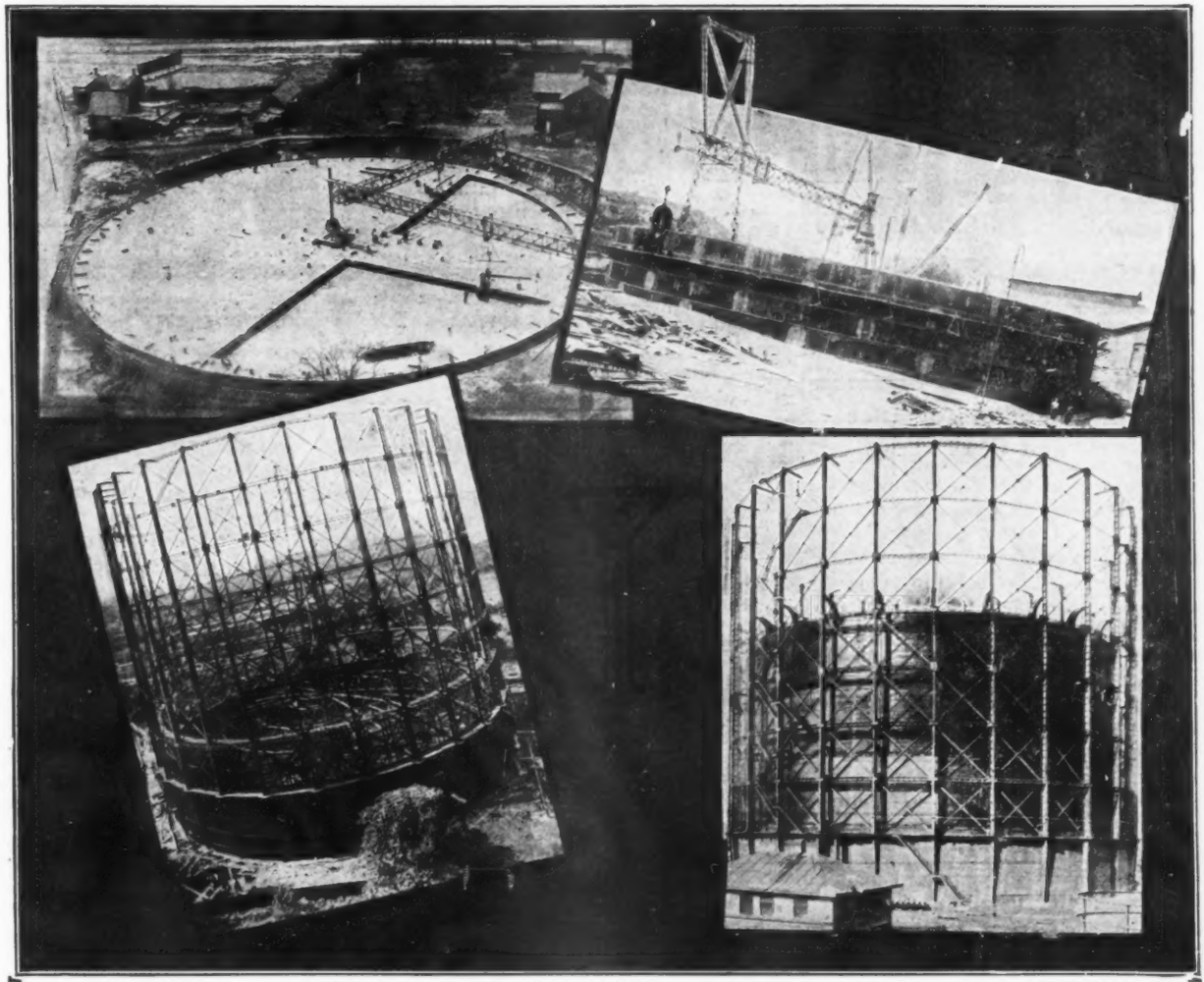
The Gary Oil & Gas Company, capital $75,000; C. L. Rimlinger, M. M. Clancy, P. B. Drew of Wilmington, Del.

The Premier Oil & Gas Company, capital $20,000; August Siler, Robert H. Wakefield, James Wakefield, all of Arnold, Penn.; R. H. Billman, New Kensington, Penn.

The Columbia Gas & Electric Company and subsidiary companies report earnings for October—

	1918	Increase
Gross earnings	$856,709	$21,095
Net oper. earnings	386,529	16,965
Total net earn. and other inc.	554,840	20,028
Surplus	197,086	14,432
Ten months ended October, 1918:		
Gross earnings	9,353,689	635,334
Net oper. earnings	4,647,650	280,447
Total net earn. and other inc.	6,286,340	298,520
Surplus	2,715,253	230,635

The Standard Gas & Electric Company board of directors has declared the regular quarterly dividend of one and one-half per cent on the preferred capital stock of the company, payable Dec. 16 to stockholders of record Nov. 30, 1918.



RITER-CONLEY COMPANY

STEEL CONSTRUCTION

PITTSBURGH

GAS PURIFYING MATERIALS

NATRONA RED ORE
To Be Mixed With Fluffing Material

MINERAL SPONGE
The Best Fluffing Material

MINERAL SPONGE OXIDE
Prepared for Use

PENNSYLVANIA SALT MFG. CO.
WIDENER BUILDING
PHILADELPHIA - - - - - - - PENNA.

With The Equipment & Appliance Manufacturers

Conducted by Business Department of American Gas Engineering Journal

An Electric Loading Machine for the Handling of Coke and Coal

Devices for the quick and economic handling of coal and coke are always of interest to gas men. We have called attention from time to time to devices for handling coal in and about the plant. The accompanying illustration shows a Conant loading elevator loading coal wagons from the railroad siding. The motive power of this machine is a 3 to 5-horsepower electric motor, the size depending on the bucket capacity and the character of the work to be performed. If electrical connection is not available an air-cooked gasoline engine may be used.

The height of the standard loader is 11 ft. 6 in.; length 8 ft. 6 in.; height of delivery 7 ft. 8 in. The buckets are made of steel or malleable iron in sizes to meet any requirements. About 20 buckets are used with each machine.

These loading machines are made by the Conant Machine Company, Concord Junction, Mass., and each has a capacity of about 30 tons per hour. Complete detailed description of the machine and its operation will be sent on request.

TWO CONANT LOADERS AT CAMP DEVENS

Use to the Economic Limit

The necessity of prompt deliveries for "essential industries" brought home to manufacturers and public utilities and the United States Government the vast amount of perfectly good, idle steam electric water gas contractors and other equipments and machinery tools lying idle in some factories and sorely needed in others.

In a very short time a gigantic business was created to locate, inspect, classify, list and advertise this idle equipment to supply the enormous demand.

Thousands of situations were thus saved, and the great lesson taught concerning the wicked waste of idle equipment, idle simply because there was no knowledge where it could be obtained, and also on account of the prejudice against the old-time "junk man."

It is thought that the gas companies did not take advantage of the idle equipment situation in that line of business, due to two or more reasons:

One is that gas companies, when extending, build large enough to last several years, at least five, and in this manner not only provide ample capacity of production for a number of years without increasing the cost of operation, but also providing duplicate machinery in case of breakdowns to insure continuous production and service.

As these companies have not installed much apparatus during the past years due to the high prices and impossibility of obtaining equipment, they have not only been taking great chances in cases of breakdown, but have been using their equipment up to the limit, and fortunately there have been but few cases where any serious lack of production has caused any trouble, but the gas man has not been able to sleep with the same security as he did in pre-war days.

We are pleased to call your attention to the full page advertisement of Mr. J. Alex Mayers, 55 William Street, New York City, who has been a conspicuous figure in the gas industry for the past twenty years, having represented at various times the manufacturers of gas machinery, holders, etc., and who subsequently designed, constructed and operated plants in this and foreign countries.

He is going into the gas business to find a place in idle corners for idle equipment, and we believe the gas industry will find his page of interest each week.